

ABSTRACT

A thin film bulk acoustic resonator including (i) a substrate ,
(ii) an acoustic mirror layer disposed on the substrate and
5 including a plurality of impedance layers alternately having a
high acoustic impedance and a low acoustic impedance, and (iii)
a piezoelectric thin film vibrator disposed on the acoustic mirror
layer, including a lower electrode a piezoelectric thin film and
an upper electrode. The sum of a thickness of the lower electrode
10 and a thickness of the upper electrode is between 5% and 60% of
a thickness of the piezoelectric thin film vibrator, and the
thickness of the lower electrode is larger than the thickness of
the upper electrode.